

METHOD OF CLEANING MEMBRANE MODULES
Zha, et al.
Appl. No.: Unassigned Atty Docket: USFMCR.133C1

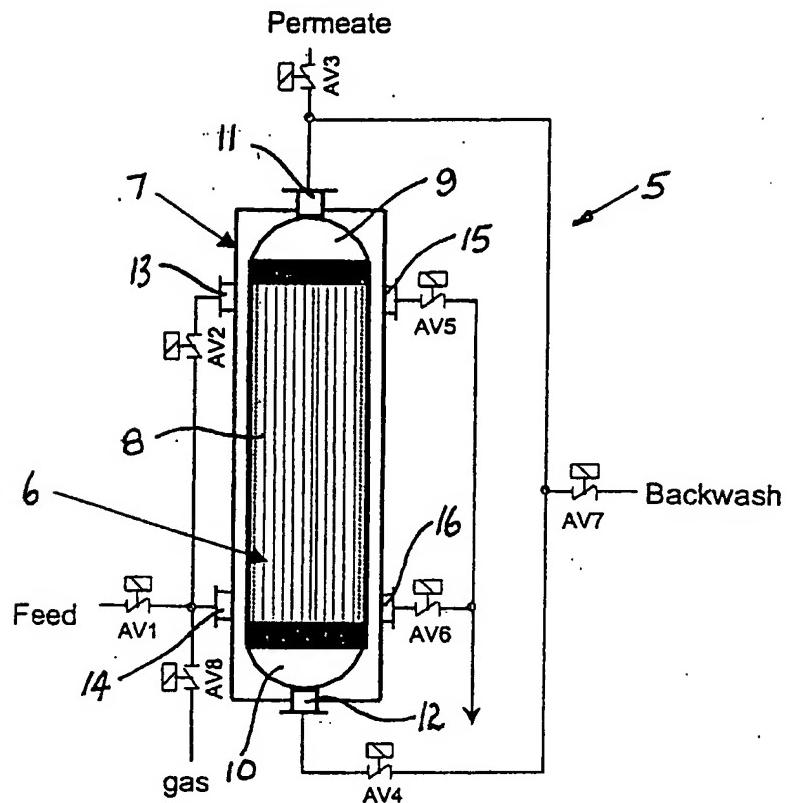
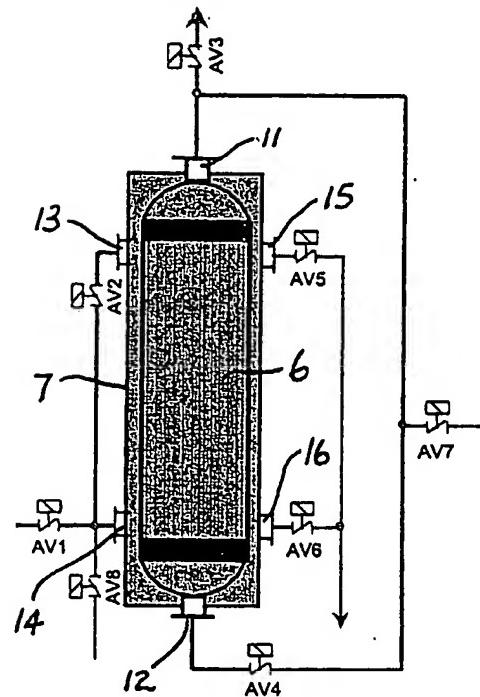
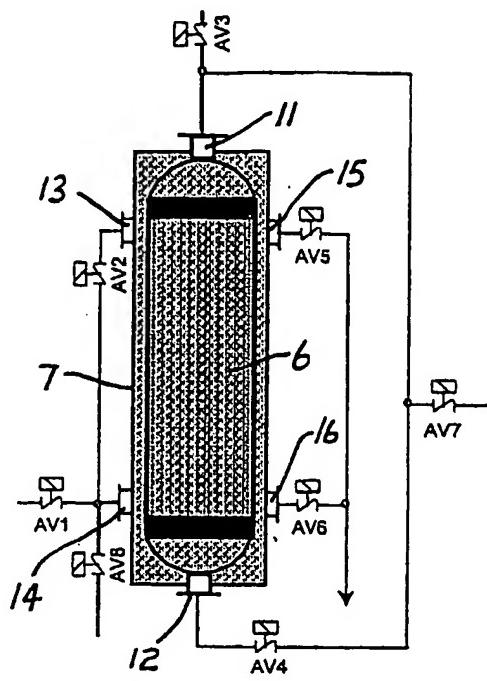


Figure 1 Membrane Module Assembly

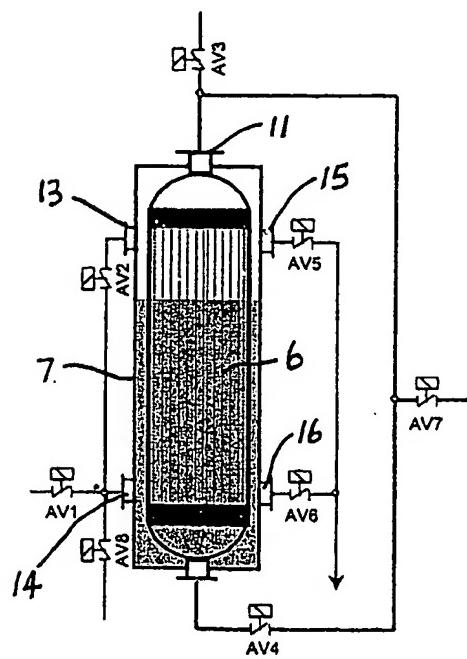
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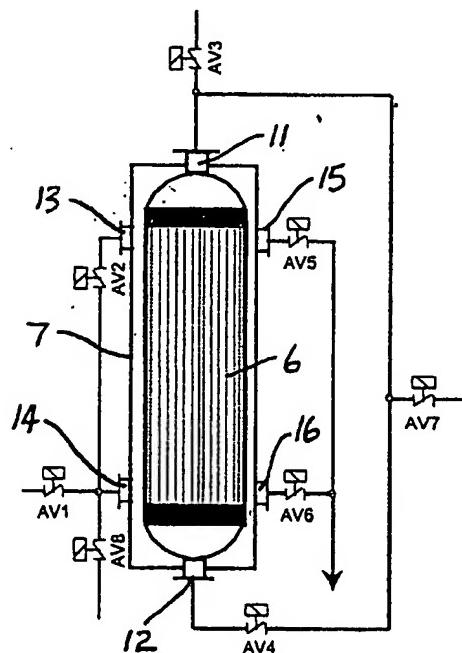
(a) Filtration



(b) Air scouring



(c) Pressurization via backwash



(d) Blow-out and fast drain-down

Figure 2 Membrane Cleaning Sequence

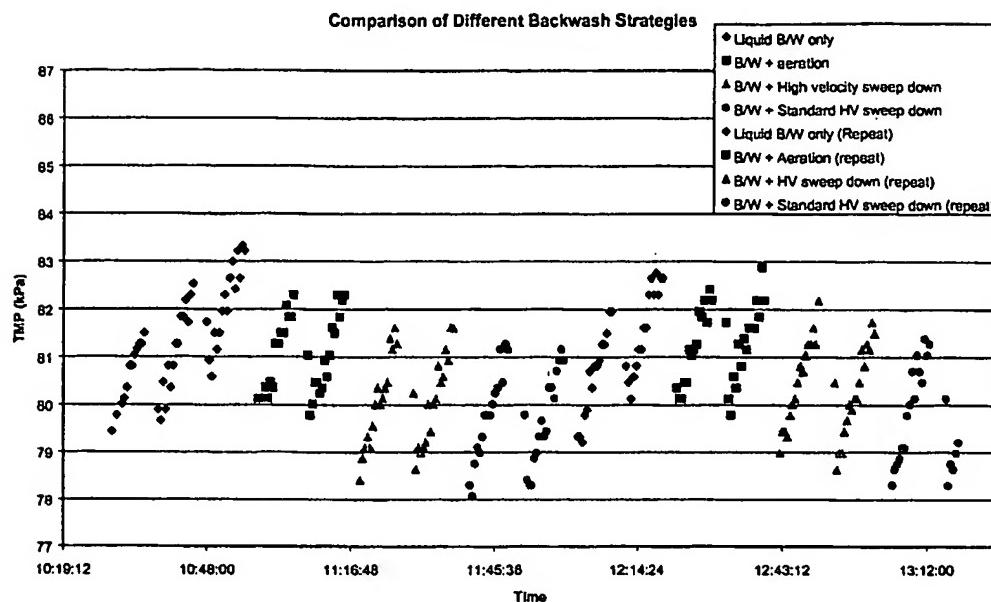


Figure 3 Cleaning Efficiency of Different Strategies

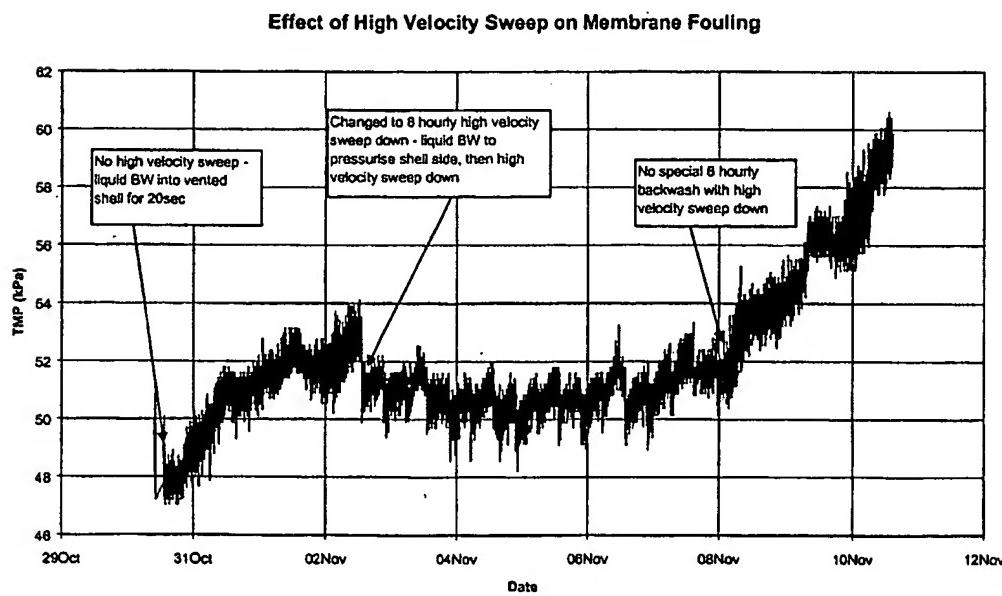


Figure 4 Effect of High velocity Sweep on Membrane Cleaning

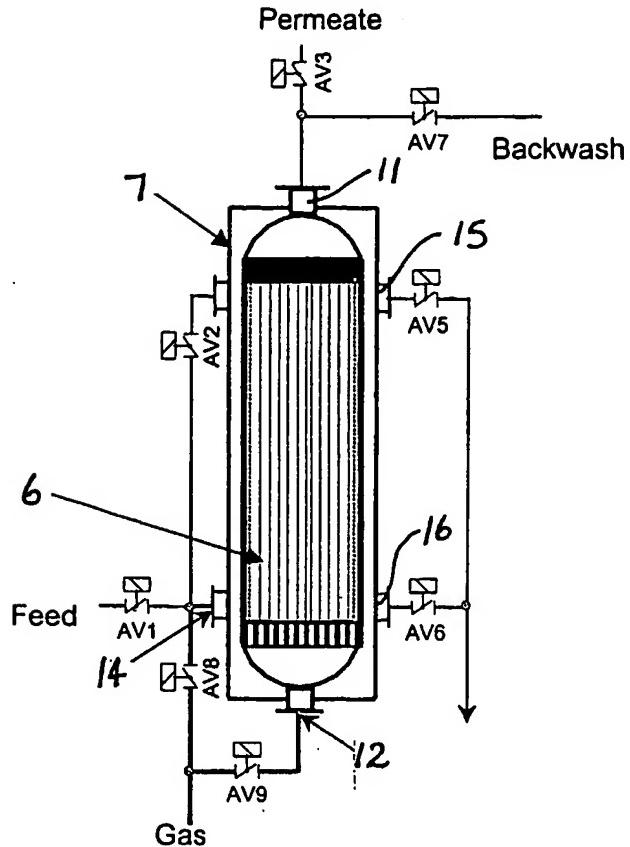


Figure 5 Alternative Air Injection

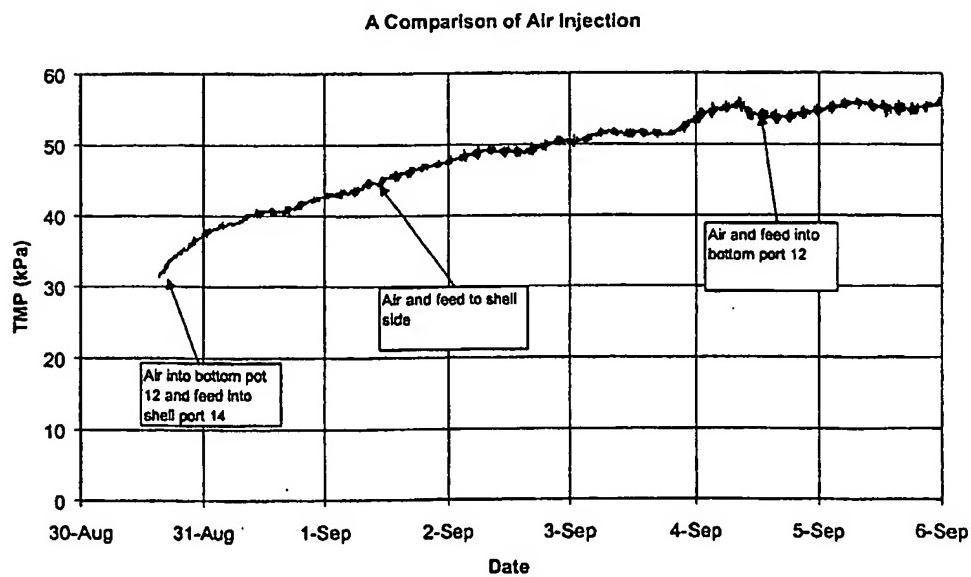


Figure 6 Effect of Alternative Air Injection on Scrubbing Efficiency